TABLE B.5.3.16–2.—*Estimated Radiological Dose and Health Impacts to Radioactive and Hazardous Waste Management Workers for the Reduced Operation Alternative (Based on 3-Year Average)*

Health Impact	Reduced Operation Alternative
Collective involved worker	0.45
Estimated increase in number of LCFs	2×10^{-4}

Source: DOE 2001c.
Note: Data for individual divisions within LLNL (for example ES&H Security Directorate) are NR. Organization numbers for LLNL personnel sometimes change due to work changes or corporate reorganizations. During any 3-month period, monitored personnel may change organizations one or more times.
LCFs = latent cancer fatalities.

B.5.3.17 *Site Contamination*

Soil and groundwater contamination at LLNL occurred as the result of past operations. The cleanup of these soils and groundwater would continue and would meet the health risk-based standards corresponding to the intended future uses of the site. At this time, analyses indicate no significant risk to the general public (LLNL 2002cc). The state, NNSA, and LLNL would continue to discuss remediation, investigation, monitoring, and potential clean-up activities, as necessary (LLNL 2002cc).

As with the No Action Alternative, RCRA closures would occur and the potential for soil contamination from any continued use of these facilities would be reduced. Under the Reduced Operation Alternative, facility-wide chemical usage and waste generation would decrease. Correspondingly, the likelihood of chemical, oil, or hazardous material (including wastes in SAAs and WAAs) spills or releases would be reduced and potential impacts would be minimized by existing controls.

B.6 *CALIFORNIA ENVIRONMENTAL QUALITY ACT* CONSIDERATIONS BY RESOURCE AREA

The NNSA recognizes the need to provide DTSC with necessary information to facilitate their decision-making process. This section contains CEQA project-specific information in one section even though the impact analysis also appears under the individual environmental resources and issue areas in this appendix and the main volume of this LLNL SW/SPEIS.

For completeness of CEQA analysis, NNSA also gathered information on all operations at LLNL including Site 300. Information regarding all facilities, site support services, site-wide water and utility use, site-wide waste generation, hazardous chemicals purchased, process wastewater, and radioactive dose data were incorporated into the analysis where appropriate. These activities include many R&D activities and routine operations; infrastructure, administrative, and central services for LLNL; facility maintenance and refurbishment activities; and environmental, ecological, and natural resource management activities.

This section considers these operations and their effects on environmental conditions under the No Action Alternative, Proposed Action, and Reduced Operation Alternative as part of the cumulative impacts.

In general, waste management operations at LLNL comprise less than three percent of the overall levels of activity at LLNL. This estimate is based, in part, on the relative percentage of waste management workforce (approximately 170 workers) to the overall workforce at LLNL (10,600 workers). Under the No Action Alternative and Proposed Action, conditions at LLNL

RHWM were projected to increase by 3 percent and 10 percent above the existing operations, respectively. Under the Reduced Operation Alternative, site operations were projected to decrease by 8 percent. These projected changes are consistent with the analysis presented in the LLNL SW/SPEIS and the earlier sections of this appendix.

To complete the CEQA analysis, four descriptive categories are used to discuss environmental impacts: Potentially Significant Impact, Potentially Significant Unless Mitigated, Less Than Significant Impact, and No Impact. These categories have been created and assigned to individual impacts only for the purposes of supporting CEQA requirements and are used here only in a CEQA context. Under NEPA, the significance of environmental impacts determines the need for the NEPA document. Once that decision has been made, specific impacts are not categorized according to level of impact in an EIS. The following describes the environmental impact categories used in this document:

- **Potentially Significant Impact**—There is substantial evidence that the impact of the proposed project may be significant and cannot be avoided or reduced to a less-than-significant level.

- **Potentially Significant Unless Mitigated**—Absent mitigation measures or project revisions, the impact of the proposed project would be considered significant.

- **Less Than Significant Impact**—The proposed project would result in an impact, but at a level that is not considered significant.

- **No Impact**—The proposed project would not result in an impact.

Based upon examination of the potential environmental effects of direct and indirect actions, NNSA has determined the following resource areas would be specifically analyzed in detail with CEQA considerations:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Minerals

- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems
- Cumulative Effects
- Mandatory Findings of Significance

Each impact section begins with a brief summary of the resource conditions, followed by a list of the standards of significance relevant to the area being discussed. The use of specific standards of significance is typical of CEQA; however, their use is acceptable in an EIS. They are used in this appendix in the discussion of all significance decisions to meet CEQA requirements. After the standards of significance, each section discusses impacts and mitigation measures as appropriate. Table B.6–1 contains a series of CEQA considerations by resource area that provide specific issues evaluated in context with proposed permit modifications. Each issue consists of a brief description and a corresponding impact indicator (○-No Impact, Δ-Less than Significant Impact, and ●-Potentially Significant Impact).

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
Aesthetics			
Have a substantial adverse effect on a scenic vista.	○	○	○
Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	○	○	○
Substantially degrade the existing visual character or quality of the site and its surroundings.	○	○	○
Create a new source of substantial light of glare which would adversely affect day or nighttime views in the area.	○	○	○
Agricultural Resources			
Convert prime farmland, unique farmland, or farmland of statewide importance (farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.	○	○	○
Conflict with existing zoning or agriculture use, or *Williamson Act* contract.	○	○	○
Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland, to non-agricultural uses.	○	○	○
Air Quality			
Conflict with or obstruct implementation of the applicable air quality plan.	○	○	○
Violate any air quality standard or contribute substantially to an existing or projected air quality violation.	○	○	○
Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	○	○	○
Expose sensitive receptors to substantial pollutant concentrations.	○	○	○
Create objectionable odors affecting a substantial number of people.	○	○	○
In addition, the following is addressed to meet the requirements set forth under Section 711.4, Fish and Game Code and 753.5, Title 14, Code of California Regulations relating to filing of environmental fees: Degradation of any air resources which will individually or cumulatively result in a loss of biological diversity among the plants and animals residing in that air.	○	○	○

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications (continued)*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
Biological Resources			
Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	○	○	○
Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	○	○	○
Have a substantial adverse effect on Federally protected wetlands as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	○	○	○
Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	○	○	○
Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	○	○	○
Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	○	○	○
In addition, the following are addressed to meet the requirements set forth under Section 711.4, Fish and Game Code and 753.5, Title 14, Code of California Regulations relating to filing of environmental fees: Plants: Changes to any riparian land or wetlands under state or Federal jurisdiction. Changes to soil required to sustain habitat for fish and wildlife. Any adverse effect to native and non-native plant life. Effects to rare and unique plant life and ecological communities dependent on plant life. Any adverse effect to listed threatened and endangered plants. Effects on habitat in which listed threatened and endangered plants are believed to reside. Effects on species of plants listed as protected or identified for special management in the Fish and Game Code, the Public Resources Code, the Water Code, or regulations adopted thereunder. Effects on marine and terrestrial plant species subject to the jurisdiction of the Department of Fish and Game and ecological communities in which they reside.	○	○	○
In addition, the following are addressed to meet the requirements set forth under Section 711.4, Fish and Game Code and 753.5, Title 14, Code of California Regulations relating to filing of environmental fees:	○	○	○

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications (continued)*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
Animals: Effects on listed threatened or endangered animals. Effects on habitat in which listed threatened or endangered animals are believed to reside. Effects on species of animals listed as protected or identified for special management in the Fish and Game Code, the Public Resources Code, the Water Code, or regulations adopted thereunder. Effects on marine and terrestrial animal species subject to the jurisdiction of the Department of Fish and Game and the ecological communities in which they reside.			
Cultural Resources			
Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5.	○	○	○
Cause a substantial adverse change in the significance of an archaeological resource pursuant to 15064.5.	○	○	○
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	○	○	○
Disturb any human remains, including those interred outside of formal cemeteries.	○	○	○
Geology and Soils			
Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42.) Strong seismic ground shaking. Seismic-related ground failure, including liquefaction. Landslides.	●	●	●
Result in substantial soil erosion or the loss of topsoil.	○	○	○
Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse.	○	○	○
Be located on expansive soil, as defined in the Uniform Building Code, creating substantial risks to life or property.	○	○	○
Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of water.	○	○	○

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications (continued)*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
Hazards and Hazardous Materials			
Create a significant hazard to the public or the environment throughout the routine transport, use, or disposal of hazardous materials.	○	○	○
Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	○	○	○
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	○	○	○
Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to public or the environment.	○	○	○
Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.	○	○	○
Hydrology and Water Quality			
Violate any water quality standards or waste discharge requirements.	○	○	○
Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficient in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).	○	○	○
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or offsite.	○	○	○
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite.	○	○	○
Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	○	○	○
Otherwise substantially degrade water quality.	○	○	○
Place within a 100-flood hazard area structures which would impede or redirect flood flows.	○	○	○
Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.	○	○	○
Inundation by sieche, tsunami, or mudflow.	○	○	○

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications (continued)*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
In addition, the following are addressed to meet the requirements set forth under Section 711.4, Fish and Game Code and 753.5, Title 14, Code of California Regulations relating to filing of environmental fees: Changes to riparian land, rivers, streams, watercourses, and wetlands under state and Federal jurisdiction. Changes to any water resources which will individually or cumulatively result in a loss of biological diversity among the plants and animals residing in that water.	○	○	○
Land Use and Planning			
Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	○	○	○
Conflict with any applicable habitat conservation plan or natural community conservation plan.	○	○	○
Minerals			
Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	○	○	○
Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.	○	○	○
Noise			
Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	○	○	○
Exposure of persons to or generation of excessive ground bourne vibration or ground bourne noise levels.	○	○	○
A substantial permanent increase in ambient noise levels in the vicinity above levels existing without the project.	○	○	○
A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	○	○	○

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications (continued)*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
Population and Housing			
Induce substantial population growth in area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure).	○	○	○
Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	○	○	○
Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.	○	○	○
Public Services			
Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services: fire protection, police protection, schools, parks, other public facilities.	○	○	○
Recreation			
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	○	○	○
Include recreational facilities or require construction or expansion of recreational facilities that might have an adverse physical effect on the environment.	○	○	○
Transportation and Traffic			
Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.	○	○	○
Exceed, either individually or cumulatively, a level of service standard established by the country congestion management agency for designated roads or highway.	○	○	○
Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	○	○	○
Result in inadequate emergency access.	○	○	○
Result in inadequate parking capacity.	○	○	○
Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).	○	○	○

TABLE B.6–1.—*Impact Issues Associated with Permit Modifications (continued)*

Issues Associated with Potential Impacts	Alternative		
	Proposed Action	**No Action**	**Reduced Operation**
Utilities and Service Systems			
Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.	○	○	○
Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	○	○	○
Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	○	○	○
Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.	○	○	○
Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments.	○	○	○
Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs.	○	○	○
Comply with Federal, state, and local statutes and regulations related to solid waste.	○	○	○
Cumulative Effects			
Increase the need for developing new technologies, especially for managing any hazardous or nonhazardous wastes that the project generates.	○	○	○
Increase the need for developing new technologies for any other aspects of the projects.	○	○	○
Leads to a larger project or leads to a series of projects, or is a step to additional projects (excludes final remedies).	○	○	○
Alters the location, distribution, density, or growth rate of the human population of an area.	○	○	○
Affect existing housing, public services, public infrastructure, or creates demands for additional housing.	Δ	Δ	Δ
Be cumulatively considerable on the environments with cumulative adverse effects on air, water, habitats, natural resources, etc.	Δ	Δ	Δ
Mandatory Findings of Significance			
Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.	○	○	○
Have impacts that are individually limited but cumulatively considerable.	○	○	○
Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.	○	○	○

Legend of Impact: ● = Potentially Significant Impact; Δ = Less Than Significant Impact; ○ = No Impact.

B.6.1 Aesthetics

This section describes impacts to aesthetics. The analysis focuses on impacts due to implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative, which are compared to existing resources. The ROI for this analysis is the surrounding areas within the general view shed of the waste management facilities.

Significance Criteria

Impacts to visual resources were qualitatively evaluated by assessing the potential degree of visual contrast that implementation of proposed permit modifications and associated waste management activities under each alternative would create with the existing landscape character. An impact is considered significant if it would noticeably increase visual contrast and reduce aesthetic quality. Temporary visual effects (such as construction) are not considered to be significant. Only visual effects that would last beyond construction (or D&D) are potentially considered significant.

California Environmental Quality Act Considerations

Under all alternatives full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would not affect any of the aesthetic parameters considered in this appendix. With the exception of the RCRA closure of Buildings 513 and 514, full operation would not entail any changes to the physical environment. The RCRA closures of Buildings 513 and 514 (including demolition) would open up views onsite; however, the effect on visual quality of the site and surrounding area would be minimal due to the density of the surrounding structures.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.2 Agricultural Resources

This section describes impacts to agricultural resources. The analysis focuses on impacts due to implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative, which are compared to existing resources. The ROI for this analysis is the surrounding areas within the general footprint of the waste management facilities.

Significance Criteria

Impacts to agricultural resources were qualitatively evaluated by assessing the potential degree of land use changes that implementation of proposed permit modifications and associated waste management activities under each alternative would create with the existing land-use character. An impact is considered significant if it would convert farmland to nonagricultural use. Temporary construction activities (such as removal, maintenance, or placement of underground utilities) are not considered to be significant.

California Environmental Quality Act Considerations

Under all alternatives, full operation of the DWTF as described in the permit, permit modifications, and the transition plan, would not affect any of the agricultural resources considered in this appendix. With the exception of the RCRA closure of Buildings 513 and 514, full operation would not entail any changes to the physical environment. The clean RCRA closures of Buildings 513 and

514 (including demolition) would remove structures from the site; however, no changes in the existing environment would result in conversion of farmland to nonagricultural uses.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.3 Air Quality

This section addresses air quality. It focuses on radiological and nonradiological (includes criteria, hazardous, and toxic air pollutants) emissions. The ROI for air quality varies according to the type pollutant.

Significance Criteria

Air quality impacts are judged to be significant if the No Action Alternative, Proposed Action, and Reduced Operation Alternative would directly or indirectly:

- Produce emissions that would cause or contribute to a violation of state or Federal ambient air quality standards
- Cause pollutant emissions in excess of BAAQMD impact significant thresholds
- Conflict with specific Air Quality Management Plan polices or programs

An alternative may have significant effects on LLNL or the RHWM facilities if it would increase demand in waste storage, treatment, and disposal in excess of storage, treatment, and disposal capabilities to the point that substantial expansion would be necessary. Significant impacts also could result from system deterioration due to improper maintenance or extension of facilities and waste management operations beyond its useful life. Effects also would be identified as significant if Federal, state, or local standards or requirements regulating the RHWM facilities (RCRA-permitted) would be violated.

California Environmental Quality Act Considerations

Under all alternatives, full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would not affect any of the air quality parameters considered in this appendix. Adequate waste management capacities exist to support all LLNL operations and LLNL waste management operations. Also full operation of the DWTF would be expected to decrease potential impacts because the existing outdoors waste operations at Area 514 would be moved inside to the DWTF (a modern waste management facility).

RHWM facilities are estimated to emit approximately 6 pounds of criteria pollutants per day. On the basis on the air toxics inventories, LLNL is ranked as a low-risk facility for nonradiological emissions. Emissions of HAPs are well below regulatory limits for single pollutants and combined pollutant HAP thresholds. No traffic-related emissions impacts associated with the No Action Alternative, Proposed Action, and Reduced Operation Alternative at RHWM facilities would be expected. No violations of Federal, state, or local standards or requirements would be expected. RCRA closures at Buildings 513, 514, 280, and 233 CSU would occur. Under all alternatives, no impacts would be expected.

The hazard risk assessment completed for the permit found that the risk and the hazard due to the continued operation of the existing facilities, even at maximum throughput conditions, would be below levels of concern described in the regulatory literature. Once the DWTF becomes operational, the facility would treat the same waste streams that are treated in the existing facilities; however, the DWTF would have improved air emissions control equipment and would treat some additional new waste streams. DOE also assessed the environmental impacts associated with the construction and operation of DWTF in an environmental assessment (DOE/EA-1150) (LLNL 1996c). Based on this assessment, the DOE issued a Finding of No Significant Impact on June 12, 1996.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.4 Biological Resources

This section analyses potential impacts on biological resources. The ROI for biological resources includes the Livermore Site, including the waste management facilities and surrounding native habitats within the vicinity of the site. All of the existing native habitat at the waste management facilities would be retained under all alternatives.

Significance Criteria

The determination of significant impacts to biological resources includes direct and indirect impacts. Direct impacts are those in which activities reduce or remove a biological resource. Indirect impacts could occur when the activity causes other actions that affect biological resources. Indirect impacts could also occur from the introduction of runoff materials into sensitive habitats.

California Environmental Quality Act Considerations

Under all alternatives, full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would not affect any of the biological resources considered in this appendix. With the exception of the RCRA closure of Buildings 513 and 514, full operation would not entail any changes to the physical environment. The RCRA closures of Buildings 513 and 514 (including demolition) would remove structures from the site; however, no changes in the existing environment would result in biological resources. No indirect impacts would occur because no runoff materials would impact sensitive habitats because runoff is collected and analyzed and disposed of appropriately.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.5 Cultural Resources

This section analyses potential impacts to cultural resources. The ROI for cultural resources includes the Livermore Site, and associated waste management facilities.

Significance Criteria

Impacts to cultural resources have been assessed using the following criteria of significance. Impacts to cultural resources listed on or eligible for the NRHP are considered significant. Impacts to buildings, structures, or archaeological sites that do not qualify for inclusion in the NRHP are not considered to be significant impacts to cultural resources.

California Environmental Quality Act Considerations

Under all alternatives, full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would not affect any of the cultural resources considered in this appendix, because proposed actions would not entail any changes to cultural resources.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.6 Geology and Soils

This ROI for geology and soils includes lands within the property boundaries of the RHWM facilities, LLNL, and adjacent contiguous land.

Significance Criteria

A project may result in a significant geologic impact if it increases the likelihood of earthquake damage, loss of mineral resources (see Section B.6.10), slope and/or foundation instability, erosion or sedimentation, land subsidence, or other severe problems of a geologic nature. Any physical changes to the property that would increase the likelihood of these events would be considered a significant impact. For CEQA purposes only, an additional significance criterion is identified. Under CEQA guidelines, a project that exposes people or structures to a major geologic hazard such as an active earthquake fault is considered a significant impact. No physical change to the environment is required for this environmental impact to be considered significant under CEQA.

California Environmental Quality Act Considerations

Under all alternatives, no impacts associated with increasing the likelihood of earthquake damage, loss of mineral resources (see Section B.6.10), slope and/or foundation instability, erosion or sedimentation, land subsidence, or other severe problems of a geologic nature would be expected. Clean RCRA closures at Buildings 513, 514, 280, and 233 CSU would not result in impacts.

Worker exposure near the geologically active Greenville and Las Positas faults by implementing the No Action Alternative and Proposed Action (the Reduced Operation Alternative decreases the number of personnel) would result in impacts and, for purposes of CEQA only, would result in a significant impact. The RCRA closures at Buildings 513, 514, 280, and 233 CSU would result in reduced impacts. No new mitigations would be implemented; Area 612 and the DWTF were previously assessed as described in the current permit.

Buildings 612, 614, and 625 have been seismically reviewed and have received a performance rating of "Good," which indicates that, during a major seismic disturbance, some structural and nonstructural damage and falling hazards may result, but that these would not significantly jeopardize life. A major seismic disturbance is defined as an earthquake at LLNL that would be given a Modified Mercalli Intensity Scale rating of at least IX. A rating of "Good" represents an acceptable level of earthquake safety. Building 693, built in 1987, was constructed to meet the 1985 UBC seismic standards, which were the standards in effect at that time. Building 695 and the Building 693 Annex have been designed to meet 1994 UBC seismic standards.

Specific CEQA considerations resulting in impacts are presented in Table B.6–1.

B.6.7 Hazards and Hazardous Materials (Includes Waste)

This section analyzes the impacts of RHWM facilities and associated operations and the implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative on existing utilities and service systems. Hazards and hazardous materials covered include radioactive, chemical, and explosive materials and wastes, including radioactive, mixed, hazardous, biohazardous, and other solid and liquid wastes. The ROI relative to hazardous material and waste is LLNL and the RHWM facilities capacities.

Significance Criteria

An alternative may have significant effects on LLNL or the RHWM facilities if it would increase demand in excess of hazardous material storage or waste storage, treatment, and disposal capacities to the point that substantial expansion would be necessary. Significant impacts also could result from system deterioration due to improper maintenance or extension of facilities and waste management operations beyond their useful life. Significant impacts to the public could result from routine or accident conditions involving the release of hazardous materials (includes waste) into the environment from the RHWM facilities. Effects also would be identified as significant if Federal, state, or local standards or requirements regulating the RHWM facilities (RCRA-permitted) would be violated.

California Environmental Quality Act Considerations

No impacts to the public or the environment involving hazardous materials and wastes associated with RHWM facilities and associated operations would result from implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative (see Table B.6–1). Adequate waste management capacities exist to support all LLNL operations and LLNL waste management operations. Under all alternatives, full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would decrease potential impacts because the existing outdoor waste operations at Area 514 would be moved inside to the DWTF (a modern waste management facility). Full implementation of the DWTF capabilities would be consistent with the goals established under the Federal Facility Compliance Order and Site Treatment Plant.

A health risk assessment completed for the permit found that the risk and the hazard due to the continued operation of the existing facilities, even at maximum throughput conditions, would be below levels of concern described in the regulatory literature (see Section B.4.18.3). Once the DWTF becomes operational, the facility would treat the same waste streams that are treated in the existing facilities; however, the DWTF would have improved air emissions control equipment and would treat some additional new waste streams. DOE also assessed the environmental impacts associated with the construction and operation of the DWTF in an Environmental Assessment (DOE/EA-1150) (LLNL 1996c). Based on this assessment, DOE issued a Finding of No Significant Impact on June 12, 1996.

LLNL would continue to use trained personnel and approved program procedures to control waste from the point of generation through storage, treatment, and disposal. LLNL waste management procedures would continue to cover the identification, generation, handling, packaging, storing, and transporting of all wastes including radioactive, hazardous, mixed, and medical wastes. No violations of Federal, state, or local standards or requirements would be expected. Clean RCRA closures at Buildings 513, 514, 280, or 233 CSU would occur.

LLNL would continue to use trained personnel and approved program procedures to control hazardous materials laboratory-wide. Laboratory-wide hazardous material maximum inventories would not change across the No Action Alternative, Proposed Action, and Reduced Operation Alternative. RHWM activities would account for less than 3 percent of the total hazardous material use at LLNL. As reported in the 1999 Supplement Analysis, quantities of chemicals at LLNL declined by over 50 percent. No additional material storage facilities are planned.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.8 Hydrology and Water Quality

This section analyzes impacts to hydrology and water resources. The ROI considered for water resources includes the RHWM facilities and the LLNL property.

Significance Criteria

An alternative may have significant effects on hydrology and water quality if it would increase demand in excess of the aquifer, drainage systems, or the floodplain areas to the point that interference or substantial changes would occur. Significant impacts also could result from deterioration due to erosion, silting, flooding, or groundwater level changes. Effects also would be identified as significant if Federal, state, or local standards or requirements regulating groundwater and surface water quality, stormwater, and wastewater discharge system would be violated.

California Environmental Quality Act Considerations

The RHWM facilities are not located in the 100-year floodplain, no surface water discharges would occur (rainwater is controlled) and no onsite groundwater use would occur. Groundwater monitoring is in place. No impacts are expected as a result of the two alternatives or the Proposed Action. Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.9 Land Use and Planning

This section analyses land-use impacts potentially resulting from implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative. Impacts to waste management facilities and surrounding land uses (including LLNL and offsite) are evaluated and compared to existing land use conditions.

Significance Criteria

The proposed changes under the No Action Alternative, Proposed Action, and Reduced Operation Alternative would cause a significant impact on land use if their implementation would conflict with established land use patterns.

California Environmental Quality Act Considerations

Implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative would not impact land use because no changes to onsite land uses would occur as part of the No Action Alternative, Proposed Action, and Reduced Operation Alternative. Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.10 Minerals

This section analyzes impacts to mineral resources resulting from implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative. Impacts to mineral resources are evaluated and compared to existing mineral resource conditions.

Significance Criteria

The proposed changes under the No Action Alternative, Proposed Action, and Reduced Operation Alternative would cause a significant impact if their implementation would result in the loss of availability of a known mineral resource.

California Environmental Quality Act Considerations

Implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative would not impact mineral resources because no changes to onsite land uses would occur as part of the No Action Alternative, Proposed Action, and Reduced Operation Alternative. Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.11 Noise

This section addresses noise and vibration impacts resulting from RHWM facilities and associated operations and the implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative and determines potential effects of that noise and vibration on nearby and onsite sensitive receptors. The ROI includes the Livermore Site and Site 300 property boundaries.

Significance Criteria

Criteria used to analyze the significance of noise impacts are derived from applicable land-use compatibility guidelines or from regulatory thresholds established by NNSA (state and local codes are considered but are not applicable). Significant impacts could result from a substantial temporary, periodic, or permanent increase in ambient noise levels in the vicinity of the RHWM facilities above existing levels.

California Environmental Quality Act Considerations

Under all alternatives, full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would decrease ambient noise levels because the existing outdoor waste operations at Area 514 would be moved inside to the DWTF (a modern waste management facility). Further, LLNL employs a proactive ear protection program. No violations of Federal, state, or local standards or requirements would be expected (see Table B.6–1).

No offsite temporary noise disturbance associated with RCRA closures at Buildings 513, 514, 280, or 233 CSU would occur (see Table B.6–1). No residential locations are within 400 feet of the four facilities. With recent construction of the NIF, planned construction of several laboratory buildings, recent removal of over 200,000 square feet of buildings and structures, the potential removal of an additional 700,000 square feet of buildings, and an active environmental restoration drilling program, the RCRA closures would not alter the ambient noise levels associated with LLNL.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.12 Population and Housing

This section analyzes population and housing impacts resulting from the No Action Alternative, Proposed Action, and Reduced Operation Alternative. The ROI includes Alameda County, San Joaquin County, Contra Costa County, and Stanislaus County.

Significance Criteria

The significance of population and housing impacts is relative to the characteristics of the geographic area and the timeframe of the analysis. Regional changes in population and housing are considered neither beneficial nor adverse impacts. These changes reflect the normal range of fluctuations in population and housing.

Population and housing changes in a given area can result in beneficial or adverse impacts to the extent that such changes would be expected to result in environmental and socioeconomic effects. However, increasing population in and of itself is not an environmental effect. Increases in population and housing would be constrained by local planning regulations. However, population and housing growth could lead to secondary impacts that could be adverse, such as the potential traffic and infrastructure costs that growth could induce.

California Environmental Quality Act Considerations

Implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative would not result in impacts on population and housing. The projected changes in the RHWM workforce under each of the No Action Alternative, Proposed Action, and Reduced Operation Alternative would be small. Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.13 Public Services

This section analyzes impacts to public services. Public services include police, fire, and other services including landfill space. The ROI includes LLNL, the city of Livermore, Alameda County, and San Joaquin County.

Significance Criteria

A project could have a significant impact on public services if it would result in hazardous conditions, emergency response time, a need for additional facilities, or substantial increases in staffing levels.

California Environmental Quality Act Considerations

Under all alternatives, full operation of the DWTF, as described in the permit, permit modifications, and the transition plan, would not affect any public services. The projected changes in the RHWM workforce are small. No changes to existing hazardous conditions or emergency response times would occur. No additional security, fire, or other public service facilities would be needed. No additional waste management facilities would be required; in fact, several waste management facilities would undergo RCRA closure under two of the No Action Alternative, Proposed Action, and Reduced Operation Alternative. A specific CEQA consideration resulting in no impacts is presented in Table B.6–1.

B.6.14 Recreation

This section analyzes recreation impacts resulting from the No Action Alternative, Proposed Action, and Reduced Operation Alternative. The ROI includes Alameda, San Joaquin, Contra Costa, and Stanislaus counties.

Significance Criteria

The significance of recreation is relative to the characteristics of the geographic area. Additional recreational facilities are considered beneficial. Minor changes in annual fiscal impacts are not considered to be environmental impacts and are not discussed in this section.

California Environmental Quality Act Considerations

No changes to existing recreation opportunities would be expected under the No Action Alternative, Proposed Action, and Reduced Operation Alternative. Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.15 Transportation and Traffic

This section presents the transportation and traffic analysis of the No Action Alternative, Proposed Action, and Reduced Operation Alternative. The ROI includes the Livermore Site, Site 300, and local transportation corridors (Greenville Road and Vasco Road).

Significance Criteria

Transportation and traffic impacts are identified as significant based on the level of service criteria. As the volume of traffic at any intersection affected by a project alternative increases, the capacity of that intersection to handle that increased volume is affected. As the level of service becomes worse, delays at intersections increase. Thus, a particular alternative would be considered to create a significant impact if the addition of its traffic resulted in a level of service at or beyond the maximum capacity. For any intersection operating beyond capacity, an increase in overall intersection delays of four percent or greater is considered to represent a significant impact.

This section assesses the traffic, parking, transit, and pedestrian impacts of each alternative.

California Environmental Quality Act Considerations

Currently daily waste management commuters are approximately 150 vehicles, assuming no carpooling, transit, or other transportation mode. Under the Proposed Action, the No Action Alternative, and the Reduced Operation Alternative, waste management commuters would number 170, 160, and 140, respectively. The current traffic loads associated with Greenville Road and Vasco Road vary from 12,000 to 15,600 vehicles per day and 16,600 and 30,000 vehicles per day, respectively. Both Greenville Road and Vasco Road are at or beyond capacity in the vicinity of I-580. Total LLNL traffic levels on these roads are estimated to be 21 percent and 36 percent, respectively, adjacent to the Livermore Site. Waste management commuter traffic would be approximately 1.5 percent of the total LLNL traffic. Additionally, 5 to 15 hazardous material shipments/receipts, 1 to 2 radioactive and hazardous waste shipments, and 7 to 10 shipments of municipal solid waste occur per week at LLNL.

Overall, the accident history near LLNL is good. LLNL parking is adequate with additional space designed into new projects including when buildings are removed.

Under all alternatives, waste management traffic would be less than 0.3 percent of the total traffic in the area including projected increases in RHWM commuters and total hazardous material and waste shipments. The level of service on these roads would not increase to or beyond the maximum capacity. No impacts would be expected (see Table B.6–1).

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.16 Utilities and Service Systems

This section analyzes the impacts of waste management facilities and associated operations and the implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative on existing utilities and service systems. Utilities covered include water distribution, wastewater, storm drainage, electrical, natural gas, telephone, and solid waste management systems. The ROI includes the Livermore Site and Site 300 property boundaries and, in the case of solid waste, regional landfill capacity.

Significance Criteria

An alternative may have significant effects on a utility or service if it would increase demand in excess of utility or service capacity to the point that substantial expansion would be necessary. Significant impacts could also result from system deterioration due to improper maintenance or extension of service beyond its useful life. Effects would also be identified as significant if Federal, state, or local standards or requirements regulating a public utility system would be violated.

California Environmental Quality Act Considerations

No impacts to utility systems would result from implementation of the two alternatives or Proposed Action (see Table B.6–1). Adequate system capacities exist to support all LLNL operations and LLNL waste management operations. No violations of Federal, state, or local standards or requirements would be expected.

Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.

B.6.17 Cumulative Impacts

Cumulative impacts are defined as two or more individual affects that, when considered together, are considerable or that compound or increase other environmental impacts. Cumulative impacts from several projects are derived from the combined incremental impact of the project added to other approved, pending, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant effects.

This section analyzes the cumulative impacts of waste management facilities and associated operations and the implementation of the Proposed Action along with several relevant projects. These other projects considered for cumulative impacts included:

- LLNL SW/SPEIS (Proposed Action, includes several recent environmental assessments)
- SNL/CA Site-Wide Environmental Assessment (Maximum Operation Alternative)

Significance Criteria

An alternative may have significant cumulative effects if it would adversely affect air, water, habitats, natural resources, and other resource areas. Cumulative effects also would be identified as significant if Federal, state, or local standards or requirements regulating aspects of NNSA facilities would be violated.

***California Environmental Quality Act* Considerations**

Several resource areas would, for the purposes of CEQA only, experience cumulatively significant impacts. Worker exposure near the geologically active Greenville and Las Positas faults, cumulatively, would result in a significant impact. Currently both Greenville Road and Vasco Road are at or beyond capacity in the vicinity of I-580. The projected increases in commuters would be greater than 4 percent and result in a significant impact.

Adequate infrastructure (including utilities and hazardous material management) system capacities and waste management capabilities exist to support all LLNL operations and SNL/CA operations. No violations of Federal, state, or local standards or requirements would be expected. Changes in emissions, discharges, and resource management would be less than significant. Specific CEQA considerations resulting in no impacts or Less Than Significant Impacts are presented in Table B.6–1.

B.6.18 Mandatory Findings of Significance

This section analyzes the Mandatory Findings of Significance with impacts of the RHWM facilities and associated operations and the implementation of the No Action Alternative, Proposed Action, and Reduced Operation Alternative.

Significance Criteria

An alternative could have significant effect if it would adversely affect air, water, habitats, natural resources, and other resource areas. Effects also would be identified as significant if Federal, state, or local standards or requirements regulating aspects of the NNSA facilities would be violated.

***California Environmental Quality Act* Considerations**

No impacts are expected. Specific CEQA considerations resulting in no impacts are presented in Table B.6–1.